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NATIONAL PHOTOGRAPHIC
INTERPRETATION CENTER

**PHOTOGRAPHIC
INTERPRETATION
REPORT**

**LAUNCH ASSIST DEVICE
COMPONENTS FOR THE SOVIET
SS-X-17 AND SS-X-18
MISSILE SYSTEMS**

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LAUNCH ASSIST DEVICE COMPONENTS FOR THE
SOVIET SS-X-17 AND SS-X-18 MISSILE SYSTEMS

ABSTRACT

1. Three types of cylinders from expended launch assist devices have been identified at the Tyuratam Missile Test Center, USSR. These cylinders have been seen discarded at research and development launch sites following SS-X-17 and SS-X-18 missile launches.

2. This report describes the three types of cylinders and includes a location map, line drawings, annotated photographs, and two tables.

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INTRODUCTION

3. The SS-X-17 and SS-X-18 missiles are liquid propellant ICBMs currently being flight tested from the Tyuratam Missile Test Center (TTMTC, Tyuratam SSM Complex). Each of these missiles is believed to use a launch assist device in expelling the missile from the silo. Figure 1 illustrates sites at TTMTC where a launch assist device (LAD) or component has been seen.

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4. A LAD consists of two basic parts: a sabot, which is attached to the missile, and a gas generator, which is beneath the sabot. A pressure chamber is between the sabot and the gas generator. In operation, gases produced by the gas generator, probably a solid propellant charge, fill the chamber and propel the sabot and missile out of the silo. The sabot separates from the missile prior to first-stage ignition.

5. The identification of three types of cylinders as components of a LAD is based on the timing and frequency of their appearance at launch sites. Tables 1 and 2 show this chronology. Additionally, several cylinders have been returned to complex H, previously associated with LAD research and development, after test firings from the R group silos. Other cylindrical objects, possibly associated with the SS-X-18 LAD, have been accumulating at complex C/H support area (Support Facility 3) since June 1973.

BASIC DESCRIPTION

6. Three differently configured cylindrical objects (Figure 2) have been identified at some of the research and development facilities for the SS-X-17 and SS-X-18 missile systems at TTMTC. Two of these objects, arbitrarily designated components A and B, are associated with the SS-X-17. The third object, designated component C, is associated with the SS-X-18.

7. Both missile systems were launch-phase tested at complex H between November 1971 and August 1972, before testing began from the silos in the R and S groups. Neither component A nor component B could be identified at complex H; however, component C has been seen discarded in the complex H debris pile.

SS-X-17 Launch Assist Device Components A and B

8. Since mid-September 1972 the SS-X-17 has been flight tested from two modified type IHD launch silos, those at sites S6 and S7. As a result of this testing, cylinders from expended LADs have frequently been seen discarded at these launch sites.

9. Either a component A or a component B was seen discarded at a launch site following ten of the 14 reported SS-X-17 launches (Table 1). Of the ten components seen since September 1972, six were type A and four were type B. Most of these components, initially discarded at a launch site after a missile launch, were subsequently removed from the site. Where these components were taken could not be discovered.

10. Several components had flattened and compressed cylinder walls. Although the cause of this damage has not been determined, the components may be damaged by a system designed to capture them in the silo. However, the component could also be damaged after it separates from the missile and falls back to the ground in the vicinity of the site.

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Component A

11. Component A is a cylinder [redacted] 25X1
(Figures 2 and 3). A light-toned dome [redacted] is centered in this cylinder with 25X1
the top of the dome about even with the top edge of the cylinder. This dome is connected to
the upper inside wall of the cylinder by a concave floor. Component A has also been seen with
the dome removed, leaving an open, thin-skinned cylindrical portion (Figure 3).

12. Component A may be the sabot portion of the SS-X-17 LAD. The light-toned dome seen
inside the cylinder may be the top half of the pressure chamber.

Component B

13. Component B [redacted] consists of a cylinder within 25X1
a cylinder (Figure 2). [redacted] 25X1
[redacted] 25X1
[redacted] The inner cylinder of component B [redacted] 25X1
with a domed top that protrudes [redacted] above the top edge of the outer cylinder. 25X1

14. Component B may be the gas generator section of the SS-X-17 LAD.

15. An undamaged component B was between the security fences at launch site S7 [redacted] 25X1
[redacted] This component was moved to a point about 1,700 feet northeast of the silo [redacted] 25X1
[redacted] Deep wheel impressions were left on the ground by the mobile crane 25X1
used to remove this component. The deep wheel impressions compared with the shallow ones left
by the crane after depositing the component indicates that the component is very heavy. The removal
of this component from the launch site suggests that it was considered hazardous to personnel and
subsequent missile launches. This component may have been faulty and was not used; it might still
have contained the propellant used to operate the LAD.

16. The relationship of components A and B to an SS-X-17 LAD is not clearly understood.
It is possible that the two components are combined to make one LAD [redacted] If they 25X1
are combined and attached to the end of the [redacted] SS-X-17 canister, the length of the canister 25X1
would then be 80 feet. Both components A and B are comparable in diameter to the [redacted] 25X1
[redacted] SS-X-17 canister. 25X1

SS-X-18 Launch Assist Device Component C

17. Since mid-October 1972 the SS-X-18 has been flight tested from type IIIF launch silos
in the R group at TTMTC. As a result of this testing, cylinders from expended LADs have been
seen discarded at three of the eight type IIIF launch sites: R4, R9, and R11. Of the other five
sites, pre- and postlaunch activity has been seen at sites R8 and R10. The silos at the remaining
type IIIF launch sites, R7 (north and south silos), R12, T1, and T2, have just recently been completed
and probably have not been used.

18. A component C (Figures 2 and 5) has been seen discarded at a launch site following ten
of the 17 reported¹ SS-X-18 launches since mid-October 1972 (Table 2). The first component was
seen at site R4 on 20 October 1972, the day after the first silo launch of an SS-X-18. This component
was subsequently removed from the site. There are presently a total of nine components at the
three launch sites: R4, R9, and R11.

19. Component C is an open, thin-skinned cylinder approximately 8 feet long and about 10
feet in diameter. The light construction of this component resembles the SS-X-17 cylinder from
component A.

20. The relationship of component C to an SS-X-18 LAD is not known. It seems unlikely
that the [redacted] length of this component could contain the entire LAD for the SS-X-18. Three other 25X1
objects may be associated with the SS-X-18 LAD and have been seen at some of the type IIIF
launch sites. These objects are: a ring, a cap, and a light-toned disc.

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Table 1. Chronology of SS-X-17 Launch Assist Device Components at Launch Sites S6 and S7 at TTMTTC (See legend below)

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| SS-X-17 Launch Dates | Launch Site S6 | | | | | | Launch Site S7 | | | |
|-------------------------|----------------|-----------|-----------|-----------|-----------|-----------|----------------|-----------|-----------|-----------|
| | Comp A | Comp A | Comp A | Comp B | Comp A | Comp B | Comp B | Comp A | Comp A | Comp B |
| 15 Sep 72* | Negate | | | | | | | | | |
| | F | | | | | | | | | |
| | R | | | | | | | | | |
| 3 Nov 72 | | Negate | | | | | | | | |
| | | F | | | | | | | | |
| | | P | | | | | | | | |
| | | P | | | | | | | | |
| | | P | | | | | | | | |
| 26 Dec 72 | | P | Negate | | | | | | | |
| | P | | F | | | | Negate | | | |
| 12 Mar 73 | | | R | | | | | | | |
| | P | | | | | | IDO | | | |
| 6 Apr 73 | IDO | | | | | | F | | | |
| | P | | | | | | IDO | | | |
| | P | | | | | | P | | | |
| | P | | | | | | P | | | |
| | P | | | | | | P | | | |
| | R | | | | | | P | | | |
| 5 Jun 73 | | | | Negate | | | | | | |
| | | | IDO | | | | | | | |
| | | | F | | Negate | | P | Negate | | |
| 21 Jun 73 | | | | | | | | | | |
| 9 Jul 73 | | | | P | F | | R** | F | | |
| | | | | P | P | | | P | | |
| | | | | P | P | | | P | Negate | |
| 25 Jul 73 | | | | | | | | | | |
| | | | | P | P | | | P | F | |
| | | | | P | P | | | P | P | |
| | | | | P | P | | | P | P | |
| | | | | P | P | | | P | P | |
| | | | | P | P | | | P | P | |
| | | | | P | P | | | P | P | |
| | | | | P | P | | | P | P | |
| | | | | P | P | Negate | | P | P | |
| 2 Oct 73 | | | | P | P | F | | P | P | |
| 18 Oct 73 | | | | P | P | P | | | | |
| 14 Nov 73 | | | | P | P | P | | | | |
| 20 Dec 73 | | | | P | P | P | | R | R | Negate |
| 27 Dec 73 | | | | | | | | | | |
| | | | | P | P | P | | | | F |

Legend

* = First silo launch of an SS-X-17

F = First observation of component

R = Component removed from launch site

P = Component present

IDO = Identifiable only

** = This component removed from launch site by mobile crane to an area about 1,700 feet away.

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Table 2. Chronology of SS-X-18 Launch Assist Device Components at Launch Sites R4, R9, and R11 at TTMTTC (See legend below)

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| SS-X-18 Launch Dates | Launch Site R4 | | | | Launch Site R9 | | | | Launch Site R11 | |
|-------------------------|----------------|-----------|-----------|-----------|----------------|-----------|-----------|-----------|-----------------|-----------|
| | Comp C | Comp C | Comp C | Comp C | Comp C | Comp C | Comp C | Comp C | Comp C | Comp C |
| 19 Oct 72* | Negate | | | | | | | | | |
| | F | | | | -- | | | | | |
| | P | | | | -- | | | | | |
| | P | | | | -- | | | | | |
| | P | | | | -- | | | | | |
| | P | | | | -- | | | | | |
| | R | | | | -- | | | | | |
| | IDO | | | | IDO | | | | | |
| 29 Dec 72 | -- | | | | Negate | | | | | |
| 21 Feb 73 | | Negate | | | | | | | | |
| | | F | | | F | | | | -- | |
| 6 Apr 73 | | | | | IDO | | | | | |
| | | P | | | P | | | | -- | |
| | | P | | | P | | | | -- | |
| | | P | | | P | | | | -- | |
| 29 Apr 73 | | P | | | P | | | | -- | |
| | | P | | | P | | | | -- | |
| | | P | | | P | | | | -- | |
| 24 May 73 | | | | | P | Negate | | | -- | |
| 16 Jun 73 | | | | | P | F | | | Negate | |
| 4 Jul 73 | | P | | | P | P | | | F | |
| | | P | | | P | P | | | P | |
| | | P | | | P | P | | | P | |
| 30 Jul 73 | | P | | | P | P | | | P | |
| | | P | | | P | P | | | P | |
| | | P | | | P | P | | | P | |
| 15 Aug 73 | | P | | | P | P | Negate | | P | |
| | | P | Negate | | P | P | F | | P | |
| 3 Sep 73 | | P | F | | P | P | P | | P | Negate |
| 12 Sep 73 | | P | P | | P | P | P | | P | F |
| 12 Oct 73 | | P | P | | P | P | P | | P | P |
| | | P | P | | P | P | P | | P | P |
| 5 Nov 73 | | P | P | Negate | P | P | P | Negate | P | P |
| 20 Nov 73 | | | | | | | | | | |
| 16 Dec 73 | | | | | | | | | | |
| 26 Dec 73 | | P | P | F | P | P | P | F | P | P |

Legend

* = First silo launch of an SS-X-18
 -- = Photo coverage, no components
 F = First observation of component
 P = Component present
 R = Component removed from launch site
 IDO = Identifiable only

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21. [REDACTED] 25X1

[REDACTED] This ring has been seen at one site, site R11, and a maximum of three rings have been seen. 25X1

22. The cap (Figure 6) has an [REDACTED] unknown height. 25X1
A slight dome appears on the bottom surface inside the cap. A cap has been seen at launch sites R8 and R9.

23. The light-toned disc (Figure 6) consists of two different-diameter, circular plates stacked concentrically, one on top of the other. [REDACTED] 25X1

[REDACTED] 25X1
Two discs have been seen at site R8, three at site R9, and one at site R11.

24. As a result of the launch-phase testing for the SS-X-18 at launch complex H, expended SS-X-18 canister sections, LAD components, and other debris have accumulated there. No such components for the SS-X-17 were identified. Since the cessation of testing at complex H in August 1972, several additional cylinders from LAD components have been seen (Figure 7). Apparently these cylinders were brought to complex H from the silos in the R group after missile firings.

25. [REDACTED] 25X1

[REDACTED] The apparent wall thickness of this cylinder is similar to the wall thickness seen on the outer cylinder of component B (SS-X-17); however, the size and configuration suggest an association with the SS-X-18. 25X1

26. Six cylinders varying in length [REDACTED] 25X1
have accumulated--one at a time--in the C/H support facility since June 1973. These dark-toned, scorched cylinders (five depicted in Figure 8) are either sections from spent SS-X-18 canisters or associated with its LADs.

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REFERENCES

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MAPS OR CHARTS

SAC. US Air Target Chart, Series 200, Sheets 0246-13, -14, scale 1:200,000

DOCUMENT

1. CIA. OSI-SD-KH/74- [redacted] *Scientific Intelligence Digest*, Jan 74, p 14 (TOP SECRET RUFF [redacted])

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REQUIREMENT

Project 120703NG

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